

WHAT IS CLAIMED IS:

1. A method for identifying an agent that modulates the activity of the HSN2 gene, comprising:
 - 5 a) contacting a test compound with a cell that expresses an HSN2 gene;
 - b) determining a change in the expression of said gene as a result of said contacting,
 wherein said determined change in expression of the gene indicates
10 modulation, thereby identifying the test compound as an agent that modulates
the activity of an HSN2 gene.
2. The method of claim 1 wherein said HSN2 gene is a mammalian HSN2I gene.
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3. The method of claim 2 wherein the mammal is mouse, rat or human.
4. The method of claim 1 wherein said modulation is a decrease in expression.
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5. The method of claim 1 wherein said cell is a mammalian cell.
6. The method of claim 5 wherein said cell is a recombinant cell.
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7. The method of claim 5 wherein said cell is a cell of the nervous system.
8. The method of claim 1 wherein said gene comprises a polynucleotide corresponding to a polynucleotide having a nucleotide sequence selected from the group consisting of SEQ ID NO: 1, 7 and 9.
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9. A method for identifying an agent that modulates HSN2 gene, comprising:

(a) contacting a test compound with a genetic construct comprising a reporter gene operably linked to an HSN2 promoter under conditions where the reporter gene is expressed;

5 (b) determining a change in expression of the reporter gene as a result of said contacting,

wherein a determined change in expression indicates modulation, thereby identifying the test compound as an agent that modulates HSN2 gene.

10 10. The method of claim 9 wherein said modulation is a decrease in expression of said reporter gene.

11. The method of claim 9 wherein said HSN2 promoter is a mammalian HSN2 promoter.

15 12. The method of claim 11 wherein the mammal is mouse, rat or human.

13. The method of claim 9 wherein said promoter is the promoter of
20 SEQ ID NO: 6.

14. The method of claim 9 wherein said genetic construct is present in a cell.

25 15. The method of claim 9 wherein said cell is a mammalian cell.

16. The method of claim 9 wherein said cell is a recombinant cell.

17. The method of claim 15 wherein said cell is a nervous system cell.

30 18. A method for identifying an agent that modulates the activity of an HSN2-encoded protein, comprising:

a) contacting a test compound with an HSN2-encoded polypeptide under conditions where said polypeptide is active; and

b) determining a change in the activity of said polypeptide as a result of said contacting;
wherein said determined change in activity indicates modulation, thereby identifying the test compound as an agent that modulates the activity
5 of HSN2-encoded protein.

19. The method of claim 18 wherein said HSN2-encoded protein is a mammalian HSN2-encoded polypeptide.

10 20. The method of claim 19 wherein the mammal is mouse, rat or human.

21. The method of claim 18 wherein said modulation is a decrease in activity.

15 22. The method of claim 18 wherein said protein is present in a mammalian cell.

23. The method of claim 22 wherein said cell has been engineered to
20 contain said protein.

24. The method of claim 23 wherein said cell was engineered by genetic engineering.

25 25. The method of claim 23 wherein said cell does not contain said protein absent said engineering.

26. The method of claim 22 wherein said cell is a cell of the nervous system.

30 27. The method of claim 22 wherein said protein is encoded by a polynucleotide having a sequence selected from the group consisting of SEQ ID NO: 1, 7, and 9.

28. The method of claim 22 wherein said protein comprises an amino acid sequence of SEQ ID NO: 2, 8, 10 or 11.

29. A method of treating a pain-related disorder comprising
5 administering to an animal in need thereof a therapeutically effective amount of an HSN2 modulator.

30. The method of claim 29 wherein said HSN2 modulator exhibits modulating activity in an assay method of one of claims 1 to 28.

10 31. The method of claim 29 wherein said agent was first identified as an HSN2 modulator using an assay method of one of claims 1 to 28.

15 32. A method for treating an HSN2-related disorder comprising administering to a person in need thereof an effective amount of a selective sensorin agonist or antagonist, or a pharmaceutically acceptable salt thereof, or a pharmaceutical composition containing said agonist or antagonist.

20 33. The method according to claim 32 wherein said disorder is pain, neuropathy or a related disorder.

25 34. The method of claim 33, wherein said pain disorder is selected from the group consisting of inflammatory pain, a neuralgia, a nerve entrapment syndrome, and pain associated with a musculoskeletal disorder.

35. A method of diagnosing the presence of, or risk of developing, an HSN2-related disorder comprising determining the presence of a mutation in the nucleic acid sequence of the HSN2 gene of said individual or in the amino acid sequence of an HSN2-encoded protein of said individual.

30 36. A method for identifying an agent that modulates HSN2 gene activity or sensorin activity, comprising: (a) contacting a test compound with a cell expressing HSN2; and (b) determining a change in expression of a HSN2 nucleic acid or the activity of sensorin, wherein said change indicates

modulation thereby identifying the test compound as an agent that modulates HSN2 gene activity or sensorin activity.

37. The method of claim 36, wherein the test compound is a small
5 molecule.

38. The method of claim 36, wherein the test compound is an anti-
sensorin antibody.

10 39. The method of claim 36, wherein the test compound is an
antisense HSN2 nucleic acid molecule.

40. The method of claim 36, wherein the test compound is a HSN2
ribozyme.

15 41. An isolated polynucleotide comprising a nucleotide sequence with
at least 60% identity to a sequence selected from the group consisting of SEQ
ID NO: 1, 6, 7, 9 and 12 wherein said isolated polynucleotide encodes a
polypeptide that binds to an antibody specific for a polypeptide having the
20 amino acid sequence of SEQ ID NO: 2.

42. The isolated polynucleotide of claim 41 wherein said identity is at
least 70%.

25 43. The isolated polynucleotide of claim 41 wherein said identity is at
least 78%.

44. The isolated polynucleotide of claim 41 wherein said identity is at
least 90%.

30 45. The isolated polynucleotide of claim 41 wherein said identity is at
least 95%.

46. The isolated polynucleotide of claim 41 wherein said identity is at least 98%.

47. The isolated polynucleotide of claim 41 wherein said polynucleotide 5 has a sequence selected from the group consisting of SEQ ID NO: 1, 6, 7, 9 and 12.

48. An isolated polypeptide comprising an amino acid sequence with at least 90% identity to an amino acid sequence selected from the group 10 consisting of SEQ ID NO: 2, 8, 10, 11 and 13 wherein said polypeptide binds to an antibody specific for a polypeptide having the amino acid sequence of SEQ ID NO: 2..

49. The isolated polypeptide of claim 48 wherein said percent identity is 15 at least 95%.

50. The isolated polypeptide of claim 48 wherein said percent identity is at least 98%.

20 51. An isolated polypeptide comprising a polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO: 2, 3, 4, 5, 8, 10, 11 and 13.

52. A method for identifying an analgesic agent, comprising:
25 a) administering to an animal an agent found to modulate HSN2 gene or HSN2-encoded polypeptide activity, and
b) determining in said animal a decrease in response to a pain stimulus as a result of said administering,
wherein a decrease in response to said pain stimulus indicates 30 analgesic activity, thereby identifying said agent as an analgesic agent.

53. The method of claim 52 wherein said animal is a mammal.

54. The method of claim 53 wherein said mammal is a mouse, a rat or a human being.

55. A method for producing test data with respect to the gene
5 modulating activity of a compound comprising:

- (a) contacting a test compound with a HSN2 gene under conditions where said gene is being expressed;
- b) determining a change in the expression of said gene as a result of said contacting, and
- 10 (c) producing test data with respect to the gene modulating activity of said test compound based on a change in the expression of the determined gene as a result of said contacting.